

CLAIMS

What is claimed is:

1. A plasma arc torch comprising:

an electrode;

a tip; and

a start cartridge disposed between the electrode and the tip,

wherein the start cartridge spaces the tip from the electrode such that a pilot arc is established between the electrode and the tip when the plasma arc torch is in a high frequency start mode.

2. A start cartridge for use in a high frequency start plasma arc torch, the start cartridge providing separation and electrical isolation between an electrode and a tip in the plasma arc torch.

3. A start cartridge for use in a high frequency start plasma arc torch, the start cartridge providing separation and electrical isolation between an electrode and a tip in the plasma arc torch, comprising:

a plurality of vent holes,

wherein the vent holes provide gas flow to cool the electrode.

4. The start cartridge according to Claim 3, wherein the vent holes further comprise outer vent holes and inner vent holes such that a velocity of the gas is increased as the gas flows from the outer vent holes to the inner vent holes.

5. The start cartridge according to Claim 3, wherein the vent holes are offset from a center of the start cartridge.

6. The start cartridge according to Claim 3, wherein the start cartridge further comprises a plurality of vent passages in communication with the vent holes to vent the gas from within the start cartridge.

7. The start cartridge according to Claim 3, wherein the start cartridge further comprises an internal collar to isolate a venting chamber from a plasma chamber within the plasma arc torch.

8. A set of consumables for use in a plurality of plasma arc torches, the set of consumables comprising a dielectric standoff sized such that the set of consumables are operable under both contact start and high frequency start modes of the plasma arc torches.

9. The set of consumables according to Claim 8, wherein the consumables are selected from a group consisting of an electrode, a start cartridge, a gas distributor, a tip, a spring, and a shield cup.

10. A set of consumables for use in a plurality of plasma arc torches, the set of consumables comprising:

an electrode;

a tip; and

a gas distributor disposed between the electrode and the tip,

wherein the gas distributor is sized to provide a dielectric standoff such that the set of consumables are operable under both contact start and high frequency start modes of the plasma arc torches.